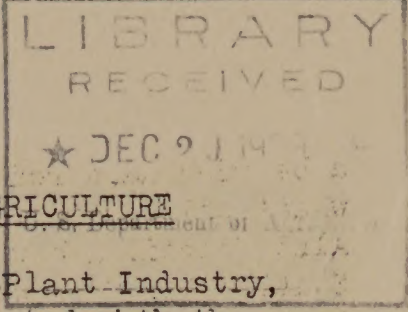


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INTRODUCING AND BREEDING NEW PLANTS FOR AMERICAN AGRICULTURE

A radio talk by Dr. W. A. Taylor, chief, Bureau of Plant Industry, delivered through Station WRC and 32 other stations associated with the National Broadcasting Company, Tuesday, December 10, 1929 at 1:30 p. m. Eastern Standard Time.

The diversity and abundance of the crop production of the United States is one of the basic elements in our national prosperity. Essential foods and fibers available in great variety and at reasonable cost to the consumer have in large measure been responsible for the development of our manufacturing and transportation industries. Our staple food, forage and fiber crops have so long been so conspicuous in our fields, garden and barns that we have difficulty in realizing that they were not here as long ago as when the white man came. But it is nevertheless true that the agricultural and horticultural, as well as the animal industries, of North America are in the main exotic - based upon plants and animals introduced from other regions and largely from other continents. This is of course true of the cereals - wheat, rye, oats, barley, buckwheat and the grain sorghums. It is true even of corn, potatoes, sweet potatoes, tomatoes, peanuts and tobacco, though these came to us from nearby South America along with certain types of beans. Of our important cultivated fruits hardly more than our Eastern and Southern grapes and our hardy plums are derived from North American native species and of the cultivated nuts the pecan is about the only North American species.

We, therefore, need to have it in our minds that our crop plant population is almost as completely of foreign origin as our human population, - in fact, in the beginning came largely with the immigrants. In short, our agriculture roots back into the plant reservoirs of regions where man has longer been at work upon the improvement of plants, even though our methods of handling them differ radically from those of the lands from which they came.

Throughout colonial times there was a more or less steady inflow of seeds and plants, mostly due to individual effort. As the importance of governmental encouragement of agriculture became recognized and activity in this field was authorized, the systematic search for promising economic plants has received the attention of the Department of Agriculture. For a time this work was almost exclusively done through correspondence, the funds available not permitting actual exploration and search for desirable plants. Some notable accessions to our agriculture were obtained in this way. Among these is the Washington Navel orange secured from an American missionary at Bahia, Brazil, in 1870, which found a congenial home in southern California where it now yields an annual crop valued at \$35,000,000 at point of shipment. Cold enduring apple varieties brought from Russia at about the same time included the now widely grown Yellow Transparent which is so conspicuous a fruit in our markets in early summer. But it was not until about thirty years ago that the foreign plant introduction work was systematized and the work of agricultural exploration seriously begun. Under this numerous wheats have been secured better suited to the conditions in particular regions than those previously there. Among these is Kharkof,

a bearded hard red winter wheat now grown in the northern edge of the winter wheat belt of the Great Plains to the extent of 2,000,000 acres annually. Also Kanred, a hard red winter wheat developed by the Kansas Experiment Station through selection out of an importation from the Crimea, now grown to the extent of 4,000,000 acres or more, largely in Kansas. Two outstanding varieties of durum wheats were brought in from Russia, some 4,000,000 acres of durum being now annually sown which yield 50,000,000 bushels or more of grain suitable for the manufacture of macaroni. The Sixty Day oat from Russia now grown to the extent of 5,000,000 acres annually in the Corn Belt and the Swedish Select grown to the extent of 4,000,000 acres are other cereals worthy of mention, as are a number of barley varieties which have become important crops in certain regions.

Among the forage crops which play so fundamental a part in our agriculture as the basic feed supply for our live stock, most of the important ones have come from foreign lands. Such crops as the clovers, red, white, alsike and sweet, were immigrants at a very early day; timothy, redtop and bluegrass likewise. Alfalfa, especially east of the Rocky Mountains, is relatively a new comer. The soybean, a legume rapidly increasing in importance in the Corn Belt and Southward to the Gulf, is even yet the subject of intensive exploration in Japan, China and Manchuria where careful search is now being made for local and specialized forms, hundreds of which are now under test by the Federal Bureau of Plant Industry and the state experiment stations. There is every present indication that it will in the near future attain the status of a staple rotation crop grown for the production of seed for sale for crushing for oil, leaving the resultant cake for feed, also for the utilization of the whole plant as forage and as a nitrogen accumulating crop for plowing under for soil improvement. Another recent forage crop immigrant is Sudan grass, which in the twenty years since its introduction from Africa has attained an acreage of at least 100,000 acres throughout a steadily increasing area where annual hay plants are valuable for supplementing the product of permanent pastures and permanent or biennial meadows. Cotton, long our most important export crop, owes one of its most important existing varieties, the Acala, to a discovery in a Mexican village by a Department explorer less than a quarter century ago. It needed to be purified and stabilized through several years of careful selection but has now become a \$50,000,000 crop in the southwest from Oklahoma through Texas to the irrigated desert valleys of California.

The establishment of date growing upon a satisfactory commercial basis in the Southwest is an important project of this character now in active progress. All of the commercially important varieties of this important fruit are still of Old World origin, no American seedling sorts having yet attained commercial status, and the search for sorts better adapted to the special climatic conditions of particular southwest desert valleys is still actively proceeding.

Not in all cases where new crops are needed to meet changing biological or economic conditions is it possible to find anywhere in the world the desired characteristics combined in any single plant or variety. Usually when such an essential as disease resistance is involved, the desired combination of characteristics must be worked out by the plant breeder. Occasionally by rare good fortune it occurs that the work of plant breeders in regions where research work on the crop has been longer

under way is unexpectedly found to meet a critical need. Thus, when the mosaic disease of sugar cane threatened the very existence of the sugar industry of our Gulf States a few years ago, it was rather promptly found that certain cane varieties bred in and for the tropical sugar industry of Java were both fairly well suited to the conditions of our Louisiana sugar belt and satisfactorily resistant to the mosaic disease. Their availability for the prompt replacement of the disease susceptible canes made possible the prompt resuscitation of the industry. This is evidenced by the quadrupling of the actual production of sugar in Louisiana between 1926 and 1929. It is recognized, however, that the Javanese varieties of cane do not possess all the characteristics desirable for the permanent maintenance of our cane sugar industry upon a prosperous basis. Accordingly, an airplane expedition sent by the Department to New Guinea in 1928, with the active cooperation of the industry, has assembled and brought back to this country as breeding stock more than 100 primitive varieties and strains of cane from which it is hoped through combination with existing varieties to produce better sorts for our exacting conditions. The breeding by a Department of Agriculture specialist of the Marglobe tomato, which is resistant to both tomato wilt and nailhead rust diseases, is estimated to have resulted in an annual saving of \$1,500,000 in a single Florida county, and it is proving well adapted to several of our principal tomato growing regions where this is an important crop for canning and other uses, as well as for use in the fresh state.

The plant breeders of the State Experiment Stations and the Federal Department are actively applying to many crops genetic discoveries of recent years on a scale hitherto not attempted, with every indication that there will gradually be developed types and varieties better adapted to the environmental conditions of our various regions and better suited to the special uses for which they are needed. The breadth of effort covers practically the whole range of food, forage, and fiber crops, including fruits, vegetables, and ornamentals. The work constitutes one of the most promising lines of endeavor for the betterment of agriculture.

